

Claims

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1. A selective wetting material comprising a film on a substrate, the film formed from a two-component plasma reaction in a substantially air-evacuated plasma chamber, a first component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor, the film having a one or more selective wetting regions formed from the exposure of the one or more selective wetting regions to a radiated electromagnetic energy in the presence of oxygen, whereby a liquid brought into contact with the film selectively wets and adheres to the one or more selective wetting regions of the film.
2. The selective wetting material of claim 1 wherein the second component of the two-component plasma reaction is selected from the group consisting of alkanes, alkenes, alkynes, phenyls and aromatic hydrocarbons.
3. The selective wetting material of claim 1 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.
4. The selective wetting material of claim 1 wherein the first component of the two-component plasma reaction is selected from the group consisting of monosilane, disilane and dichlorsilane.
5. The selective wetting material of claim 4 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.
6. A process for selectively wetting a film on a substrate, the process comprising the steps of:  
forming the film on the substrate from a two-component plasma reaction in a

substantially air-evacuated plasma chamber, a first component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor;

5        patterning the film with a radiated electromagnetic energy through a mask in the presence of oxygen to produce a one or more photo-oxidized regions from exposure to the radiated electromagnetic energy through the mask; and

          contacting the film with a liquid, whereby the liquid selectively wets and adheres to the one or more photo-oxidized regions.

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7. The process of claim 6 wherein the liquid is an electrically conductive material.

8. The process of claim 7 further comprising the step of drying the electrically conductive material adhering to the one or more photo-oxidized regions to form a printed circuit

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9. The process of claim 7 wherein the electrically conductive material is a solution of metal ions and reducing agents.

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10. The process of claim 9 wherein the metal ions are silver ions.

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11. The process of claim 6 wherein the liquid is a buffered oxide etch.

12. The process of claim 6 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

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13. The process of claim 6 wherein the first component of the two-component plasma reaction is selected from the group consisting of monosilane, disilane and dichlorsilane.

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14. The process of claim 13 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

15. A process for forming a photomask comprising the steps of:

forming a film on an optically transparent substrate from a two-component plasma reaction in a substantially air-evacuated plasma chamber, a first component of the two-component plasma reaction comprising a non-carbon containing and non-oxygenated silicon donor, and a second component of the two-component plasma reaction comprising a non-silicon containing and non-oxygenated organic precursor;

patterning the film with a radiated electromagnetic energy through a mask in the presence of oxygen to produce a one or more photo-oxidized regions from exposure to the radiated electromagnetic energy through the mask;

contacting the film with a non-transparent liquid, whereby the non-transparent liquid selectively wets and adheres to the one or more photo-oxidized regions;

drying the non-transparent liquid adhering to the one or more photo-oxidized regions to produce a one or more non-transparent regions on the film; and

etching away the film in regions not included in the one or more non-transparent regions to form the photomask.

16. The process of claim 15 wherein the second component of the two-component plasma reaction is selected from the group consisting of alkanes, alkenes, alkynes, phenyls and aromatic hydrocarbons.

17. The process of claim 15 wherein the second component of the two-component plasma reaction is selected from the group consisting of ethylene, methane, ethane and toluene.

18. The process of claim 15 wherein the first component is selected from the group consisting of monosilane, disilane and dichlorsilane.

19. The process of claim 18 wherein the second component is selected from the group consisting of ethylene, methane, ethane and toluene.

20. The process of claim 15 wherein the non-transparent liquid is a metal plating solution.

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